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THE INFLUENCE OF MARRIAGE ON THE DEATH-RATE OF MEN AND WOMEN.

BY GEORGE I. BLISS, A. B., AA. A.

Prof. Walter F. Willcox, in his sixth annual report to the New York State Commissioner of Health, submitted some very interesting tables as to the influence of marriage on the health of men and women. His study was based on the population and deaths of New York state outside of greater New York and Buffalo for 1909-1911. Prof. Willcox showed that the death-rate of husbands is much lower than that of bachelors at each age group, except 80 and over; and that at the ages from 30-49 the death-rate of the former is less than one half of that of the latter. He likewise showed that the death-rate of married women is lower than that of spinsters at each decennial age group, excepting 20-29, as it is set forth in the following table:

TABLE I.

POPULATION, DEATHS AND DEATH-RATES CLASSIFIED BY SEX, AGE, AND MARITAL CONDITION, NEW YORK STATE (EXCLUSIVE OF NEW YORK CITY AND BUFFALO).

(Average of 1909, 1910, 1911.)

MALE.

Age Period.	Single.			Married.		
	Population.	Deaths.	Death-rate.	Population.	Deaths.	Death-rate.
20-29.....	231,625	1,532	6.6	128,339	533	4.2
30-39.....	76,614	986	12.9	229,128	1,344	5.9
40-49.....	37,172	724	19.5	196,465	1,856	9.5
50-59.....	21,142	607	28.7	144,972	2,466	17.0
60-69.....	9,881	504	51.0	98,673	3,151	31.9
70-79.....	3,759	381	101.4	40,015	2,910	72.7
80 and over.....	754	154	204.2	6,134	1,258	205.1

TABLE II.
FEMALE.

Age Period.	Single.			Married.		
	Population.	Deaths.	Death-rate.	Population.	Deaths.	Death-rate.
20-29.....	145,537	684	4.7	176,583	1,006	5.7
30-39.....	54,769	405	7.4	227,473	1,428	6.3
40-49.....	35,812	357	10.0	187,947	1,536	8.2
50-59.....	19,389	386	19.9	124,673	1,803	14.4
60-69.....	12,062	448	37.1	68,781	1,933	28.1
70-79.....	5,623	462	82.2	21,112	1,296	61.4
80 and over.....	1,058	296	279.8	1,848	360	194.8

The results were so startling that they aroused a good deal of comment in the daily papers, and merit further investigation. But in view of the dearth of reliable statistics on this study in the United States I resorted to the well-known letters of Dr. James Stark to the Registrar-General of births, deaths, and marriages in Scotland, and found very interesting tables on this subject.

I therefore submit the following table showing the population and deaths of married and unmarried men at each quinquennial age group and the death-rate per 1,000 living :

FROM THE NINTH DETAILED REPORT (1863).

TABLE III.
MARRIED AND UNMARRIED MEN IN SCOTLAND.

Ages.	Married.			Unmarried.		
	Number Living.	Deaths.	Death-rate.	Number Living.	Deaths.	Death-rate.
20-25.....	22,946	137	6.0	106,587	1,251	11.7
25-30.....	54,221	469	8.7	48,618	666	13.7
30-35.....	66,153	600	9.1	25,962	383	14.8
35-40.....	63,858	690	10.8	15,857	253	16.0
40-45.....	62,645	782	12.5	12,311	208	16.9
45-50.....	54,505	869	15.9	8,824	179	20.3
50-55.....	49,591	880	17.7	7,636	205	26.8
55-60.....	38,006	929	24.4	5,550	142	25.6
60-65.....	35,920	1,216	33.9	5,242	227	43.3
65-70.....	22,021	1,134	51.5	2,848	156	54.8
70-75.....	16,029	1,291	80.6	2,021	205	101.4
75-80.....	9,716	1,135	116.8	1,081	157	145.4
80-85.....	5,477	953	174.0	513	101	196.9
85-90.....	1,708	488	285.7	151	32	211.9
90-95.....	449	137	305.1	50	21	420.0
95-100.....	103	40	388.4	6	3	500.0
100 and above.....	28	15	535.7	3		
All ages.....	503,376	11,765	23.4	243,259	4,189	17.2

The first striking fact which this table reveals is that the death-rate of the bachelors was double that of the married men between the ages of 20 and 25. As its persons became older, this excessive difference in the death-rates of the married and unmarried decreased slowly and regularly, showing the difference in favor of the married men at every period of life. It is thus proved that the state of bachelorhood is more destructive to life than the most unwholesome trades. When we come to the total death-rate at all ages, however, the very reverse is the case. The general death-rate among married men is very much higher than that among single men; so that, while only 1,723 bachelors died during the year out of every 100,000 bachelors, 2,338 married men died out of a like number of married men.

This apparent contradiction may be explained as due to the fact that the number of bachelors being far greatest at that period of life when the mortality is very low, namely, from 20 to 24, whereas the number of married men is greatest at those periods of life when the mortality is high, seeing that the mortality increases with age. Furthermore, almost half of all the deaths of the bachelors occur before the thirtieth anniversary, at which period the mortality is much lower than at the more advanced periods of life. When the whole deaths at all ages are thrown together and compared with the total bachelors living, the general mortality seems to be little higher than that due to the earlier period of life. Among the married men, on the other hand, the greatest number of deaths occurs between the sixtieth and seventy-fifth year of life, at which period the mortality is high as compared with the number living. Consequently, when the total deaths of the husbands of all ages are compared with the total living, a high mortality seems to have prevailed, because the persons were all so much older when they died than were the bachelors. Therefore, comparing the total deaths of the married at all ages with the total deaths of the bachelors, necessarily leads to a false conclusion. In comparing mortality rates of two or more classes, to be correct, it must be limited to comparing at each age group, and the smaller we take the age group the more nearly correct are the rates.

Before we proceed to compare the facts relative to the very different death-rates of the married and unmarried men in the whole population of Scotland for the year 1863 with those brought out by Professor Willcox we must bear in mind that the widowed and divorced were included among the married men in the former, while in the latter they were tabulated separately. According to Professor Willcox the death-rate of widowers and divorced men is very much higher than that of husbands of the same age and about the same as bachelors between the ages 30 and 80. Making due allowance for the widowed and divorced men Table I is in every point corroborated by Table III. Had Professor Willcox tabulated his statistics in quinquennial ages he would, doubtless, have found the relative difference in the death-rate between husbands and bachelors higher between 20 and 29 and also higher for ages 80 and over.

In view of the striking difference between the death-rates of married and unmarried men shown to exist at each quinquennial age in the population of Scotland for the year 1863, it was decided to investigate the subject further. Accordingly another table was prepared based on the statistics of 1864. It is not necessary to give the table here but I might mention the fact that it corroborated in every point the preceding one.

The different death-rates prevailing among married and single men in Tables I and III were brought out by a comparison of the deaths with the living, where the correctness of the conclusion rests on the truthfulness of the numbers of the married and unmarried as ascertained at the census. But the correctness of the conclusion may be tested by estimating the mean age at death of the married and the unmarried, and if the two results corroborate each other, we may place greater confidence in the results deduced from the facts.

I have calculated the mean age at death of all the husbands and bachelors from 20 to the close of life and find that the mean age at death of husbands in Professor Willcox's table was 60.0, whereas the mean age at death of the bachelors was only 43.6, a difference of 16.4 years. In Table III the mean age at death of the married was 59.7, whereas the mean age at death of the bachelors was 40 years, a difference of 19.7 years.

It would appear that the husbands in New York State (outside of New York City and Buffalo) have a chance of living 16.4 years longer than those who remain bachelors; and that the married men of Scotland have a chance of living 19.7 years longer than the unmarried.

These statistics seem to prove that the married state is best fitted for mankind. The married man is, in general, not only more healthy, vigorous, and free from the diseases of the unmarried, but he is also more regular in his habits, is better housed, better fed, and better attended to. The married men may be accounted as selected lives; for the weak, the delicate, those suffering from disease of any kind, the dissipated and the licentious are not as likely to marry, so that a larger proportion of such are found among the ranks of the unmarried men; and these are known to die at a much higher rate than the robust and temperate. This is the natural explanation of the difference which exists in the death-rates of the married and unmarried.

The various reasons enumerated above, however, would only account for the difference in the death-rate of the married and unmarried during the earlier years of life, say from 20 to 40 years of age, but quite fails to explain the difference in the death-rate at the higher ages, for almost all those who remain unmarried from natural infirmity of constitution, or from being addicted to intemperate or licentious habits, die before they have attained their fortieth anniversary. Very few survive the critical age of 50. Therefore, all bachelors who survive their fortieth year, and certainly all those above 50 years of age, must be considered as selected lives; and the difference found to exist in the death-rates of the married and unmarried in that period of life can reasonably be attributed to causes connected with their being married or unmarried.

In the seventh and eighth detailed annual report (relating to the year 1861 and 1862 in Scotland), attention was directed to the influence of marriage on the death-rate of women. Two tables were published, based upon the return of 1861 and 1862, showing the different death-rates which prevailed at each quinquennial period of life of those who were married, and those

who were unmarried. The widows and divorced women were included among the married.

The following table shows the number of the living, and deaths of the married and unmarried women at different ages, in Scotland in 1862, and the death-rates per 1,000 living at each age group :

TABLE IV.
MARRIED AND UNMARRIED WOMEN IN SCOTLAND IN 1862.

Ages.	Married.			Spinsters.		
	Number Living.	Deaths.	Death-rate.	Number Living.	Deaths.	Death-rate.
20-25.....	39,924	364	9.1	114,180	895	7.8
25-30.....	71,649	683	9.5	61,044	506	8.3
30-35.....	77,503	764	9.9	34,954	367	10.5
35-40.....	71,962	806	11.2	24,368	300	12.3
40-45.....	69,660	806	11.7	19,690	225	11.4
45-50.....	58,934	785	13.3	14,659	222	15.1
50-55.....	54,479	826	15.2	13,973	269	19.3
55-60.....	41,462	886	21.4	10,216	244	23.9
60-65.....	42,390	1,200	28.3	11,405	370	32.4
65-70.....	26,242	1,242	47.3	6,875	350	50.9
70-75.....	20,337	1,342	65.5	5,544	434	78.3
75-80.....	12,190	1,424	116.8	3,230	359	111.1
80-85.....	7,490	1,278	170.6	1,986	332	167.2
85-90.....	2,646	708	267.6	582	161	276.6
90-95.....	763	282	369.7	181	55	303.9
95-100.....	203	94	463.1	48	20	416.7
100 and above....	34	17	500.0	23	3	130.4
All ages.....	597,868	13,507	22.6	322,958	5,112	15.6

Comparing the mortality of the married and unmarried women at every quinquennial age group, it is seen that the high death-rate of the married women appears to be confined to the ages under 30 years; but that from 30 to 39 years, the death-rate of the married women falls below that of the spinsters. At the ages 40 to 44, the mortality of the married again slightly exceeds that of the unmarried. From age 45 to old age, however, the married die in smaller proportion than the unmarried.

The results brought out by this table as to the difference in the relative mortality between married women and spinsters are practically the same as by Professor Willcox's table excepting at the ages 40 to 44, and again at the extreme ages 75 and upwards. In the former table the mortality of the married, at ages 40 to 44, slightly exceeds that of the spinsters,

whereas in the latter table the mortality of the spinsters exceeds that of the married. Had Professor Willcox, however, given the death-rate by quinquennial age-groups, it would probably have shown the same break, for if we combine the two quinquenniums in the former we find a higher death-rate for the spinsters. At the extreme ages again the higher death-rate shown among married women than among spinsters is due to the fact that widows and divorced women were included in the former table and the high death-rate was probably caused by widows, who generally predominate at this period of life.

It appears that the higher death-rate suffered by the married women below the thirtieth year of life is probably caused by the greater danger to life which attends the bearing of the first child, for at this age period a large proportion of married women give birth to their first child. But when that age was attained when the great majority of married women had survived the birth of their first child, namely, above 30, the mortality of the married women fell below that of the unmarried. From 40 to 45 when the usual "change of life" occurs, the mortality of the married again exceeds slightly that of the unmarried. But from 45 to old age, the death-rate of the married is distinctly better than that of the spinsters. Above age 75 the relative mortality fluctuates, but the numbers are too few to draw any conclusions.

It is worthy of consideration how far the higher rate of mortality shown to exist among spinsters above age 30 may be due to extensive understatement of their ages. If the spinsters were on the average three years older than they represented themselves to be in the census returns, and the ages of the married women were correctly given, this would probably fully account for the greater apparent mortality of the spinsters.

The relative mortality of spinsters and married women among insured had been recently investigated by the Medico-Actuarial Mortality Investigation Committee, based upon the experience of forty-three life insurance companies (M. A. M. I. Vol. II, page 36). It showed a distinctly lower mortality for spinsters than for married women, excluding widows and divorced women, at every age group, the average difference

for all ages being 38 per cent. in favor of spinsters. The favorable mortality of the spinsters as compared with the married women deduced from insurance statistics, however, is not a characteristic of the class in the general population. The great majority of spinsters insured by the companies were teachers, stenographers, librarians, and other similarly favorable types. Only a small proportion of them were employed as saleswomen in the stores, or were engaged in factory work. Therefore, these statistics of the insured women do not disprove the conclusions reached by Professor Willcox and fully corroborated by the tables from Scotland, that the influence of marriage on the death-rate of the female sex, though not so potent as on the male, is considerable.